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**2001-2010: Decade to Roll Back Malaria in Developing Countries, particularly in Africa**

# 2001-2010: Decade to Roll Back Malaria in Developing Countries, particularly in Africa

## Report of the Secretary-General

*Summary*

The present report highlights the activities undertaken and progress made in the first year of 2001-2010: the Decade to Roll Back Malaria in Developing Countries, particularly in Africa. The report also summarizes the burden of malaria and the challenges facing malaria-endemic countries in the fight against the disease. It describes the origins of the Roll Back Malaria Initiative (RBM) and the four main strategies for achieving the goal of halving the world's malaria burden by 2010: prompt access to effective treatment; malaria prevention through vector control, particularly the use of insecticide-treated nets (ITNs); the prevention and management of malaria in pregnancy; and prevention and effective response to malaria in epidemics and complex emergencies.

The report reviews Roll Back Malaria implementation status with a focus on two critical strategies: prompt access to effective treatment and the use of ITNs. It also illustrates the RBM partnership's early success in creating an enabling environment and nurturing a social movement to roll back malaria through advocacy efforts such as Africa Malaria Day, and cross-sectoral approaches such as trade reforms (reducing and eliminating taxes and tariffs on ITNs) and environmental policy (preserving countries' ability to use DDT for malaria control). Finally, the report provides an update on promising new tools to fight malaria, specifically, intermittent preventive treatment for infants and long-lasting insecticide nets.

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The examples of progress contained in the present report illustrate both the complexity of controlling malaria and the ingenuity of partnership that can be mobilized to address the problem. The Roll Back Malaria partnership has studied the challenge before it and is organizing its resources to provide increased and improved support to malaria-endemic countries to scale up effective interventions. Resources, both human and financial, are still the major constraint in the fight against malaria, but the situation is improving. The momentum of Roll Back Malaria must not be lost, and the achievements, large or small, of any malaria-endemic country must be acknowledged, supported and replicated.

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# I. Background

1. Malaria, together with HIV/AIDS and tuberculosis, is one of the major public health challenges undermining development in the poorest countries in the world.

2. On 7 September 2001 in its resolution 55/284, the General Assembly proclaimed the period 2001-2010 the Decade to Roll Back Malaria in Developing Countries, particularly in Africa. The resolution was born out of the growing consensus that malaria, one of the deadliest and economically most devastating of all tropical diseases, could be effectively controlled with the tools and strategies currently available.

# II. The burden of malaria

3. Malaria is the number-one killer of young children in Africa, but it is preventable and treatable. Highly cost-effective interventions have been available for more than a decade, but, with the exception of a very small number of countries in South-East Asia and Africa, none of them has yet been applied on a big enough scale to make much difference in malaria incidence, morbidity or mortality.

4. Today approximately 20 per cent of the world's people — mostly those living in the poorest countries — are at risk of malaria. Malaria causes more than 300 million acute illnesses and at least 1 million deaths annually. Ninety per cent of deaths due to malaria occur in Africa, south of the Sahara — mostly among young children. Malaria kills an African child every 30 seconds. Pregnant women and their unborn children are also particularly vulnerable to malaria, which is a major cause of perinatal mortality, low birth weight and maternal anaemia.

5. Malaria is understood to be both a disease of poverty and a cause of poverty. Malaria has significant measurable direct and indirect costs, and has recently been shown to be a major constraint to economic development. For developing economies this has meant that the gap in prosperity between countries with malaria and countries without malaria has become wider every single year. Not only does malaria result in lost life and lost productivity due to illness and premature death, it also hampers children's schooling and social development through both absenteeism and permanent neurological and other damage associated with severe episodes of the disease.

# III. The malaria challenge

6. There are four types of human malaria — Plasmodium vivax, Plasmodium malariae, Plasmodium ovale and Plasmodium falciparum. P. vivax and P. falciparum are the most common and P. falciparum the deadliest type of malaria infection.

7. Malaria is transmitted by mosquitoes of the Anopheles species. The malaria parasite enters the human host when an infected mosquito takes a blood meal. Inside the human host, the parasite undergoes a series of changes as part of its complex life cycle. Its various stages allow plasmodia to infect the liver and red blood cells, and finally develop into a form that is able to infect a mosquito again when it bites an infected person. Inside the mosquito the parasite undergoes more changes until it reaches the stage at which it can again infect a human host when the mosquito takes her next blood meal, 10 to 14, or more, days later.

8. Malaria symptoms appear about 9 to 14 days after the infectious mosquito bite, although this varies with different plasmodium species. Typically, malaria produces fever, headache, vomiting and other flu-like symptoms. If drugs are not available for treatment or the parasites are resistant to them, the infection can progress rapidly to become life-threatening. Malaria can kill by infecting and destroying red blood cells (anaemia) and by clogging the capillaries that carry blood to the brain (cerebral malaria) or other vital organs.

9. There are several reasons why Africa bears an overwhelming proportion of the malaria burden. Most malaria infections in Africa south of the Sahara are caused by Plasmodium falciparum, the most severe form of the disease. This region is also home to the most efficient, and therefore deadliest, species of the mosquitoes that transmit the disease. Moreover, many countries in Africa have lacked the infrastructures and resources necessary to mount sustainable programmes against malaria.

10. One of the greatest challenges facing Africa in the fight against malaria is drug resistance. Resistance to chloroquine, the cheapest and most widely used antimalarial, is common throughout Africa

(particularly in southern and eastern parts of the continent). Resistance to sulfadoxine-pyrimethamine, often seen as the first and least expensive alternative to chloroquine, is also increasing in eastern and southern Africa. As a result of these trends, many countries are having to change their treatment policies and use drugs that are more expensive, and combinations of drugs, which, it is hoped, will slow the development of resistance.

11. In addition, some insecticides are no longer useful against the mosquitoes that transmit the disease. Years of vaccine research have produced few hopeful candidates, and, although scientists are redoubling the search, an effective vaccine is at best years away. Nevertheless, effective low-cost strategies are available for treatment, prevention and control.

## IV. The origins of the Roll Back Malaria Initiative and the Decade to Roll Back Malaria

12. When the goal of malaria eradication was abandoned, many malaria-control programmes fell into disrepair, particularly in Africa. The problems of drug and insecticide resistance were compounded by general weaknesses in the health-care infrastructure and economic shocks that reduced government spending per capita on health care. The malaria situation worsened, and fatalism and resignation regarding the disease became widespread.

13. However, recognition of the human and economic costs of malaria, combined with increasing confidence in control strategies, renewed an international commitment to address the burden of this disease. During the 1990s, momentum towards a new attack on malaria, especially in Africa, gathered strength. In 1992, the Ministerial Conference on Malaria in Amsterdam enunciated a Global Malaria Control Strategy, which was endorsed by the Economic and Social Council of the United Nations in 1994. The World Health Assembly adopted a resolution on controlling malaria in Africa in May 1996, and the Organization of African Unity (OAU) made declarations on malaria in Harare in 1997 and Ouagadougou in 1998. The World Health Organization (WHO) Regional Office for Africa became increasingly active in the malaria field; in 1996 it launched the African Initiative for Malaria Control, which contributed $9 million in 1997 and 1998 for accelerated implementation of malaria-control activities in 10 countries of the region, and provided the foundation for the eventual launch of the Roll Back Malaria Initiative (RBM).

14. RBM is a global partnership founded in 1998 by WHO, the United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF) and the World Bank with the goal of halving the world's malaria burden by 2010. The RBM partnership includes national Governments, civil society, non-governmental organizations, research institutions, professional associations, United Nations and development agencies, development banks, the private sector and the media. The strength of RBM lies in the diverse strengths and expertise of its many partners.

15. Raising the profile of malaria as a major development issue and galvanizing political commitment was the first challenge for the RBM partnership. Global advocacy and lobbying helped heighten political awareness. In Abuja, Nigeria, in April 2000, delegations from 44 African nations met at the OAU Extraordinary Summit, the first ever meeting of Heads of State focused on a single health issue. The African leaders, who endorsed RBM's goal for 2010 in the Abuja Declaration, also set interim targets and drew up a plan of action for expanding access to and use of effective interventions. In September 2001 the period 2001-2010 was proclaimed the Decade to Roll Back Malaria in Developing Countries, particularly in Africa.

### The Roll Back Malaria strategy

16. The Roll Back Malaria partnership is seeking to:

(a) Expand the use of interventions that are already known to be effective in tackling malaria;

(b) Support work that will result in even more effective interventions in the near future, such as better medicines and longer-lasting insecticide-treated mosquito nets;

(c) Encourage the research necessary for even better interventions to be developed and deployed in the future — including improved drugs and insecticides, as well as malaria vaccines and possibly

genetically modified mosquitoes that will not transmit malaria.

17. Roll Back Malaria is promoting four main strategies to pursue its goal of halving the world's burden of malaria by 2010. The strategies are evidence-based (shown to be effective), outcome-focused and cost-effective.

18. **Prompt access to treatment**: All people infected with malaria, especially young children, must receive prompt treatment with effective drugs. RBM is working to ensure that people seek treatment promptly when they or their children have malaria symptoms and to educate health workers and shopkeepers (who sell antimalaria drugs) to recognize and correctly treat malaria. Because of the dangers associated with increasing drug resistance, RBM partners are trying to make sure the right drugs are available in the right place at the right time for the people who need them. Mapping drug resistance, encouraging and supporting countries to change their treatment policies when necessary and promoting the development and use of new drugs, particularly combination drugs that slow the development of resistance, are essential to the success of this strategy.

19. **Insecticide-treated mosquito nets**: There is no doubt about the effectiveness of insecticide-treated mosquito nets (ITNs); the challenge now is to scale up their use. A substantial body of evidence shows that in malarious areas, ITNs reduce deaths in young children by about 20 per cent and that for every 1,000 children under five years of age protected by ITNs, about six lives are saved each year. Sleeping under an ITN is the most effective method for individuals and families to avoid malaria. Overcoming the barriers of the cost and low demand for ITNs and the insecticides needed to re-treat them are key challenges to realizing the full potential of this intervention. Social marketing programmes, the encouragement of local mosquito-net industries and progress in persuading Governments to abolish taxes and tariffs on ITNs are helping bring down the cost of ITNs.

20. **Prevention and control of malaria in pregnant women**: Pregnant women and their unborn children are particularly vulnerable to malaria, which is a major cause of perinatal mortality, low birth weight and maternal anaemia. It is thought that between 75,000 and 200,000 annual infant deaths worldwide are associated with malaria during pregnancy, with 24 million pregnancies threatened each year in Africa alone. In addition to sleeping under ITNs, intermittent doses of effective antimalarial drugs, given to all pregnant women at risk of malaria, is highly effective in reducing the consequences of malaria during pregnancy.

21. **Malaria epidemic and emergency response**: Epidemics can occur when malaria attacks vulnerable populations with little or no immunity. In such situations, people of all age groups are at risk of death or severe disease. Factors that may precipitate a malaria epidemic fall into two categories: natural (climatic variations, natural disasters) and man-made (conflict and war, agricultural projects, dams, mining, logging). The RBM partnership is working to improve the prediction of, detection of and response to epidemics as well as developing tools and strategies to prevent or limit the impact of malaria in complex emergencies.

## V. Progress in the Decade to Roll Back Malaria

22. The first step in describing progress towards the Abuja targets and the RBM goal is a measurement of the actual coverage of the principal interventions. A first assessment of the national-level coverage of two of the RBM strategies — prompt access to effective treatment and ITN use in malaria-endemic African countries — was recently conducted.

23. The assessment drew on data from 22 population-based UNICEF Multiple Indicator Cluster Surveys and 7 ORC Macro Demographic and Health Surveys conducted between 1998 and 2001. Of children under 5 years of age with fever, a clinical indicator of malaria, in the previous two weeks, 56 per cent were reported to have been treated with an antimalarial. In fact, in 17 countries, analgesics, which are ineffective against malaria, constituted the main form of fever treatment. Moreover, a considerable proportion of antimalarial treatments may not be life-saving because either the parasite is resistant to the drug, the drug is of poor quality, the drug is given too late in the course of the illness or a full course of the drug is not provided (which can also promote drug resistance).

24. In 24 countries, use of ITNs for children under 5 was at or below 5 per cent. Use of bednets was consistently lower in rural areas and in poorer

households, where most malaria occurs. The use of untreated bednets was, however, more frequent than expected; this indicates the potential for future coverage with ITNs. Also, while still largely insufficient, the present coverage with ITNs represents progress as compared to coverage in the early 1990s, when there was no ITN use at all. However, one year into the Decade to Roll Back Malaria, it is still too early to demonstrate the effect of intervention coverage on morbidity, mortality or economic burdens.

25. Internal and external evaluations of RBM conducted in late 2001 and early 2002 have provided evidence that the RBM partnership is successfully fostering an environment in which countries can establish policies and actions to roll back malaria that are effective, sustainable and respond well to the local context. This enabling environment has been created as a result of effective advocacy and strategic cross-sectoral collaboration. An example of effective advocacy is provided below in the description of Africa Malaria Day. Examples of cross-sectoral collaboration are the international effort to reduce taxes and tariffs on ITNs, netting materials and insecticide, and RBM's participation in the process that led to exemptions in the Stockholm Convention on Persistent Organic Pollutants for the use of DDT in malaria vector control. Another enabling factor is the expanded financial resource base for action against malaria, notably through increasing bilateral support and the Global Fund to Fight AIDS, Tuberculosis and Malaria. Malaria is also becoming an important topic in discussions of poverty reduction and debt relief, and malaria control is now seen by many to be an important element of national poverty reduction strategies for malaria-endemic countries. Investment in research, both basic and operational, has also increased as a result of government, foundation and private contributions.

## The enabling environment

### 1. Africa Malaria Day

26. Nurturing a social movement that enlists the help of a diverse collection of community groups is the next big challenge facing RBM. A social movement needs to encourage and foster the promotion of individual and community protection against malaria, to lobby for health-system reform and to end acceptance of malaria's intolerable burden. The Abuja Declaration designated 25 April each year as Africa Malaria Day, a day to remember the effect malaria has on African lives and to monitor progress against the disease. The first anniversary of the Abuja Summit, Africa Malaria Day 2001, was marked by presidential speeches, radio and television education campaigns and a host of public events across Africa. Africa Malaria Day 2002 had "Mobilizing communities to roll back malaria" as its main theme, with the intent that the planned events and celebrations would catalyse the social concern and community mobilization needed to sustain the health-system reform, political will and strategic planning already committed to rolling back malaria.

27. With the RBM secretariat providing general guidance on the theme of Africa Malaria Day 2002 ("Mobilizing communities to roll back malaria") and general advocacy materials (information packs, posters, pins, beach balls, stickers, etc.), countries took the lead in organizing in-country events. Activities were reported in more than 25 African countries. Besides increased country participation, there was also greater cooperation among partners. Many countries, notably Ghana, Benin, Nigeria, the Democratic Republic of the Congo, Zambia, the Sudan and Mozambique, organized large-scale activities supported by a huge range of partners, including WHO, UNICEF, the World Bank, UNDP, multilateral and bilateral agencies, international, national and local non-governmental organizations and the private sector. There was also a good relationship with local media, which provided free newspaper, radio and television slots to put across the messages. Some non-governmental organizations and private sector partners used the Day to organize their own activities. Private sector partners that arranged events include Aventis, BASF, Bayer, Dow AgroSciences, ExxonMobil, GlaxoSmithKline, Mitsui Chemicals, Novartis, Quality Chemicals, Siamdutch, Sumitomo Chemicals, Shell and Syngenta.

28. Major initiatives launched on the Day included the scaling up of the Home Based Management programme in Uganda and the ITN Massive Promotion and Awareness Campaign in Nigeria. Global media coverage centred on the announcement of malaria projects receiving Global Fund awards and the WHO announcement of an artemisinin-based combination therapy that could be purchased at cost price by countries with malaria-drug resistance through a procurement agreement negotiated between RBM and the manufacturer.

### 2. The reduction and elimination of taxes and tariffs on insecticide-treated nets

29. The high cost of ITNs is one of the critical barriers to their widespread use, and taxes and tariffs contribute significantly to that cost. Over the past three years, 17 countries[1] in Africa south of the Sahara have either reduced or eliminated taxes and tariffs on the importation of mosquito nets, netting material and insecticides. The successful adoption of these reforms by some countries, and the continued advocacy on behalf of these policies throughout Africa and elsewhere, has been one of the key achievements of Roll Back Malaria at the beginning of the twenty-first century.

30. The substantial progress that has been made within the relatively short time since the Abuja Summit in April 2000 was made possible only through the collaboration of RBM partners. RBM is monitoring the impact of reforms in countries that have elected either to eliminate or reduce taxes and tariffs on ITNs and other products. Highlights of activities undertaken include the following:

(a) An evidence base has been developed to support policy dialogue, promoted by the non-governmental organization community, academic researchers and bilateral and international agencies;

(b) Continued discussion of the evidence base at international and regional meetings has contributed to a growing awareness that reduction or elimination of taxes and tariffs on ITNs is a worthwhile policy goal for all countries of the Africa region;

(c) RBM partners collaborated to place a "call for the elimination of taxes and tariffs on ITNs" in the record and proceedings of the World Trade Organization meeting held in Seattle (United States of America) in 1999. The call was made on behalf of the Southern Africa Development Community by the representative of the United Republic of Tanzania;

(d) The Declaration of the Abuja Summit, signed on 25 April 2000 by 44 African Heads of State or senior representatives, included the following resolution: "To take immediate action to reduce or waive taxes and tariffs for mosquito nets and materials, insecticides, antimalarial drugs and other recommended goods and services that are needed for malaria control strategies";

(e) Various RBM partners have disseminated information on the barriers posed by taxes and tariffs to widespread use of ITNs and the potential benefits of eliminating them. Target audiences include health, economic, trade and foreign policy specialists;

(f) Policy dialogue and policy reform were successfully taken forward in the United Republic of Tanzania, providing a case study for RBM partners and an example for other African nations;

(g) The first Africa Malaria Day, on 25 April 2001, provided the occasion to take stock of the status of implementation of the Abuja Declaration. The RBM secretariat released a report it had commissioned on the status of tax and tariff policy. Also, several countries announced a policy change and/or signed legislation reducing or waiving taxes on ITNs.

31. The effort is ongoing. RBM partners continue to draw attention to the status of tax and tariff reforms and to encourage reforms in countries that have not yet made them. The RBM partners also support market surveillance to determine the impact the reforms are having on the price and the use of ITNs.

### 3. Malaria, DDT and the Stockholm Convention on Persistent Organic Pollutants

32. In 1999, the RBM secretariat was called upon to help resolve a controversy emerging from intergovernmental negotiations to establish an international environmental treaty. At the centre of this controversy was DDT, former hero of the malaria eradication campaign and current totemic villain of the environmental movement. The treaty being negotiated was intended to eliminate the production and use of 12 persistent organic pollutants.

33. The challenges presented to the RBM secretariat in responding to the controversy were many and varied. The RBM secretariat led the WHO delegation to all meetings of the Intergovernmental Negotiating Committee and prepared information and media events for each, supporting the participation of health and malaria specialists from a number of countries. The RBM secretariat also served as the media focal point on malaria and DDT and provided interviews and information to all major media, as well as presentations to professional meetings and interest groups.

34. RBM's objectives throughout this process were to:

(a) Establish consensus on the present and future role of DDT and alternatives in malaria control;

(b) Encourage greater involvement of public-health specialists in country-level discussions about the treaty and in country delegations to the negotiating sessions;

(c) Provide information to negotiators and others that would reduce controversy and result in a win-win situation for public health and the environment (in which the longer-term goal of DDT elimination is achieved through strengthened, more robust malaria control);

(d) Benefit from the media attention to inform the public about malaria;

(e) Mobilize resources to support malaria control from outside the health sector.

35. All of these objectives have been met, and the final treaty, the Stockholm Convention on Persistent Organic Pollutants, provides for the continued public-health use of DDT and international assistance for the development and implementation of alternatives.

# VI. The implementation of strategies to roll back malaria

## A. Country strategic plans

36. Malaria control was once seen almost as an issue for ministries of health alone. However, the RBM partnerships introduced new ways of working, which have expanded Governments' perspectives beyond the health sector. The country strategic plans already completed by 15 African countries have brought together ministries of health, finance, agriculture and others in a productive alliance with non-governmental organizations and the private sector to produce strong multisectoral plans. Developing these plans has resulted in a greater consensus on what must be done to roll back malaria, and by whom, than previously existed. Different plans identify locally appropriate actions at the country level, but all include items such as:

(a) Carrying out health impact assessments during the planning of national development projects;

(b) Encouraging small private sector concerns in each country to participate in the commercial distribution of insecticide-treated mosquito nets and antimalarial treatments;

(c) Promoting microdevelopment projects targeting households and empowering women and community groups to provide health benefits;

(d) Strengthening health systems and using existing programmes, such as those for child survival or antenatal care, to deliver RBM interventions.

37. More than 21 countries in Africa, the Mekong region of South-East Asia and the Americas are now working through local partnerships to develop the capacity to fully implement their country strategic plans using ongoing health sector reforms and linkages to other initiatives, such as Integrated Management of Childhood Illness and Making Pregnancy Safer, to improve access to key interventions. Country strategic plans have been successful in attracting new resources for malaria control. However, given projected resource needs to the year 2010, only 20 per cent of necessary funds will be available locally. African countries, working with their partners and donors, must identify and mobilize resources for the remainder. Countries are looking to a variety of sources to ensure sustainable financing of their efforts to roll back malaria. This includes traditional sources of funding — national treasuries and the donor community — as well as the exploration of new opportunities through debt relief schemes and the newly formed Global Fund to Fight AIDS, Tuberculosis and Malaria.

## B. Engaging the private sector in action to roll back malaria

38. The development of global public/private partnerships, as well as traditional country-level partnerships between non-governmental organizations, other groups and Governments, is an important and innovative element of the RBM Initiative. Partnerships of this type have already shown their value. A leading pharmaceutical company is working with WHO to make a new, highly effective antimalarial combination therapy, which delays the onset of drug resistance, available to malaria-endemic countries at cost price. Discussions are under way with a range of textile, polymer and insecticide companies to make long-lasting, low-cost, insecticide-treated mosquito nets

readily available in Africa and to accelerate the transfer of net-production technology to African industry. Oil companies, such as Eni and ExxonMobil, have brought new funds and resources to malaria programmes at many levels.

39. Local and international businesses operating in malarious areas are also learning that support for malaria control not only reduces levels of absenteeism and lost productivity, but also facilitates labour, community and government relations. In the long term increased productivity will encourage market expansion, boost household spending and change consumption patterns. Increased malaria control will work to the benefit of many companies, especially those producing consumer goods or developing local tourist industries.

40. Some of the ways in which private companies have contributed vital resources and expertise to malaria control include the following:

(a) Contributing much-needed capital to scale up current programmes or create new ones;

(b) Assisting in the research and development of new interventions and treatments for malaria;

(c) Providing management and business expertise to stimulate the market for insecticide-treated mosquito nets and antimalarial drugs;

(d) Using their network of distribution channels to take life-saving medicines and prevention measures to remote communities;

(e) Using their marketing and public relations expertise to assist public education campaigns.

## C. Improving the tools to roll back malaria

### 1. Intermittent preventive treatment for infants

41. Severe anaemia takes a heavy toll on African children in malaria-endemic countries. A recent estimate suggests that approximately 1.4 million to 5.7 million cases occur each year, killing 190,000 to 974,000 children under 5 years of age, with the highest mortality occurring in infants younger than 12 months.[2] Although iron deficiency, intestinal helminth infections and HIV make significant contributions to the pathogenesis of anaemia in many African countries, there is now a substantial body of evidence to suggest that in malaria-endemic areas particularly those with high transmission intensity, malaria is a major underlying factor. Antimalarial interventions could therefore constitute an important part of future strategies to prevent anaemia among this vulnerable group.

42. A recent study from the United Republic of Tanzania has demonstrated that a single dose of an antimalarial drug, sulphadoxine-pyrimethamine, given to healthy infants at two, three and nine months of age, at the time of routine Expanded Programme on Immunization (EPI) vaccination, reduced episodes of clinical malaria by 60 per cent and episodes of anaemia by 50 per cent during the first year of life.[3] A further, unpublished study from the United Republic of Tanzania has demonstrated similar results with a different antimalarial drug, amodiaquine.

43. These are extremely promising findings, since they demonstrate the feasibility of delivering an antimalarial intervention through the existing channels of EPI, a factor that is likely to facilitate long-term sustainability. There are, however, a number of important outstanding issues that must be resolved before widespread implementation can be considered. The most important of these is to ensure that the drugs used do not compromise serological responses to EPI vaccines. It would be a disaster for EPI programmes if infants who had received concurrent antimalarial treatment at the time of vaccination subsequently developed vaccine-preventable diseases. It is anticipated that definitive data on this issue will become available within the next year. To minimize disruptions to the running of routine EPI Programmes, it will also be necessary to develop an infant dosage of the relevant antimalarial drugs, in a formulation that is both easy and quick to administer. The second key factor is the need to demonstrate that the intervention works in a number of geographic settings, of differing malaria-transmission intensity. The results of two large ongoing studies in Ghana will become available during 2003. If these studies demonstrate a reduction in episodes of malaria and anaemia, and the intervention is also shown to have no adverse impact on EPI vaccine efficacy, it would then be appropriate to move to carefully monitored implementation. The UNICEF Accelerated Child Survival and Development Programme, currently starting in selected districts of four West African countries, is likely to provide a suitable opportunity for taking this forward, and WHO,

RBM, the Special Programme for Research and Training in Tropical Diseases, EPI and UNICEF are already engaged in relevant discussions to plan these activities.

44. There are a number of outstanding research questions of importance that will need to be addressed in the near future but that need not delay the onset of monitored implementation. A demonstrated reduction of mortality is likely to facilitate future sustainability. The intervention mechanism needs to be elucidated, and its impact on the subsequent development of antimalarial immunity should be explored. It will be important to understand the impact that the intervention may have on the attitude of local communities to EPI vaccination, and to assess cost-effectiveness.

### 2. Long-lasting insecticide-treated nets

45. Long-lasting insecticide-treated nets (LLINs) have been developed in response to low re-treatment rates of conventional insecticide-treated mosquito nets, especially in Africa. An LLIN is a ready-to-use, pre-treated mosquito net that requires no further treatment during its expected life span (average 4 to 5 years). Most national malaria control programmes, United Nations agencies and non-governmental organizations now regard LLINs as the best option for the future, provided they are effective, acceptable and available at a reasonable cost. Although LLINs are not yet available in large numbers and their evaluation is not yet completed, the demand for them is already very high.

46. There is an urgent need for realistic solutions to malaria control problems, and therefore the WHO Pesticide Evaluation Scheme (WHOPES), on behalf of the RBM partnership, is providing provisional recommendations on the use of LLINs as long as they have been treated with a WHO-recommended insecticide. WHOPES recommendations are made after LLINs have been carefully tested in laboratory and small-scale field trials, which simulate long-term use. Recommendations will be periodically reviewed, as more information on the long-term efficacy and operational acceptability of LLINs becomes available through larger-scale testing and evaluation.

47. To date, only one LLIN product (Olyset Net) has been evaluated through WHOPES and been recommended by WHO for use. This net is made of polyethylene, with permethrin incorporated into the fibres. Since polyethylene nets are not yet widely used in Africa, further testing for local acceptability is recommended before large-scale introduction of the product, and WHO has developed a protocol for this testing. So far, Olyset Nets have been relatively expensive and available only in limited quantities, but it is expected that they will [illegible]e produced in Africa at a reasonable cost (not [illegible] than $5). Until cost-effective and acceptable LLINs recommended by WHO become locally available, the use of conventionally treated nets should continue to be promoted.

48. Considering the interest shown in LLINs and current industry developments, it is expected that effective and affordable LLINs will become generally available by the end of 2002. Efforts are currently being made to stimulate innovative public/private partnerships and to find appropriate mechanisms, which may result in local mass production of LLINs in Africa, with a significant reduction in price.

## VII. Conclusions and recommendations

49. Although it is early in the Decade to Roll Back Malaria, it is clear that the goal of reducing the malaria burden by half by the year 2010 represents an enormous challenge. The data of the first set of national population-based surveys show that we are still far from the Abuja goals of 60 per cent coverage with ITNs and antimalarial treatment. The low coverage of these principal interventions at the outset of the Decade to Roll Back Malaria provides further justification for the RBM partnership effort. While the goals are ambitious, with the current data we have a benchmark and established methodologies for measuring progress in the future.

50. The examples of progress contained in the present report illustrate both the complexity of controlling malaria and the ingenuity of partnership that can be mobilized to address the problem. The Roll Back Malaria partnership has studied the challenge before it and is organizing its resources to provide increased and improved support to malaria-endemic countries to scale up effective interventions. Resources, both human and financial, are still the major constraint in the fight against malaria, but the situation is improving. The momentum of Roll Back Malaria must not be lost, and

the achievements, large or small, of any malaria-endemic country must be acknowledged, supported and replicated.

51. **It is therefore recommended that the General Assembly:**

**(a) Call on Member States, particularly those that have experienced the burden of malaria and managed to control or eliminate the disease, to join in solidarity with malaria-endemic countries in Africa and elsewhere in their struggle to roll back malaria;**

**(b) Reinforce the intent of the Abuja Declaration and encourage malaria-endemic countries to eliminate or substantially reduce taxes and tariffs on ITNs, netting materials and insecticides used in malaria prevention if they have not already done so;**

**(c) Advocate continued and increased support for the Global Fund to Fight AIDS, Tuberculosis and Malaria, as well as increased bilateral support for fighting malaria;**

**(d) Call on malaria-endemic countries to address the malaria burden through all means available, including sector-wide approaches, sector credits, debt relief and poverty-reduction strategies;**

**(e) Call on United Nations agencies to renew their commitment to Roll Back Malaria and the goal of halving the burden of malaria by 2010.**

*Notes*

[1] Benin, Cameroon, Chad, Côte d'Ivoire, Ghana, Kenya, Liberia, Mali, Mozambique, Namibia, Nigeria, Senegal, the Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

[2] S. C. Murphy and J. G. Breman, "Gaps in the childhood malaria burden in Africa: cerebral malaria, neurological sequelae, anemia, respiratory distress, hypoglycemia, and complications of pregnancy", *American Journal of Tropical Medicine and Hygiene*, vol. 64 (2001), (1-2 suppl.), p. 57.

[3] D. Schellenberg, C. Menendez, E. Kahigwa et al, "Intermittent treatment for malaria and anaemia control at time of routine vaccinations in Tanzanian infants: a randomized, placebo-controlled trial", *The Lancet*, vol. 357 (January-June 2001), p. 1471.